
Novelties in *Rhynchospora* (Cyperaceae) from the Guianas

Mark T. Strong

Department of Systematic Biology, MRC/166, Smithsonian Institution,
10th & Constitution Avenue, Washington, D.C. 20560-0166, U.S.A.

ABSTRACT. Five new species are described (*R. angustipaniculata*, *R. ayangannensis*, *R. bakhuisensis*, *R. donselaarii*, and *R. rupicola*) and a new name proposed (*R. pubisquama*) in *Rhynchospora* Vahl nom. cons. from northeastern South America (Guianas). Illustrations are provided for the new species, their classification is determined, and a discussion of related species is given for each.

Key words: Cyperaceae, Guianas, *Rhynchospora*, South America.

Rhynchospora Vahl nom. cons. is a genus of approximately 250 species worldwide. It is most diverse in the Western Hemisphere, particularly warm-temperate North America and the Neotropics. Eighty taxa (including the new taxa described here) are currently known from the Guianas (Guyana, Surinam, and French Guiana).

Species of *Rhynchospora* are very diverse vegetatively and can range from diminutive annuals less than 10 cm tall to large rhizomatous perennials up to 3 m tall. The leaves are primarily basal, 2 to several cauline, linear to filiform, dorsiventrally compressed, and often have scabrous margins. The inflorescence structure is rather diverse and can range from a single solitary spikelet or capitate head of spikelets at the summit of the culm to large decompound panicles of many spikelets, often composed of a terminal and a series of 1 to several lateral, remote or contiguous, simple to compound, corymbiform or cymose partial panicles from the upper sheathing bracts. The floral morphology is generally uniform and can be characterized as follows: spikelets have spirally arranged scales, with (1)2 to many basal scales empty (sterile); the fertile scales are borne above these and each subtends a perfect flower, or often the terminal 1 or 2 scales are staminate only with abortive pistil; each flower has (1)2 or 3 stamens; the style is 2-branched or entire; and achenes are biconvex or lenticular, are often transversely rugose or rugulose, and bear at their apex the persistent triangular, triangular-lanceolate, or discoid style base.

In preparing *Rhynchospora* for the *Flora of the Guianas*, I noted five new species, which are here validated. In addition, a nomenclatural change is

necessary for elevating a variety of *R. cephalotes* (L.) Vahl to the species rank. The species are given in alphabetic order.

Rhynchospora angustipaniculata M. T. Strong, sp. nov. TYPE: Guyana. Potaro-Siparuni Region: summit of Mt. Kopinang, 05°00'N, 59°55'W, 1700–1800 m, 8 Apr. 1988, W. Hahn 4374 with E. Judziewicz & D. Gopaul (holotype, BRG; isotypes, MO, NY, US 3385739). Figure 1.

Haec species inter congeneros sectionis *Panicularum* Boeckeler *R. longiflorae* C. Presl affinis, sed ab ea laminae foliaris costa abaxialiter setosa atque achenio longiore in rostrum longius bilobum basi non articulatum desinente et setis longioribus subtento differt.

Caespitose perennial; rhizome short, thick; sheathing base of culm 4–6 mm wide; roots stiff, branched. Culms slender, ascending, 6–8 dm tall, 0.7–2 mm wide, trigonous proximally with concave sides, compressed-trigonous distally, finely ribbed, smooth, green, glabrous except for appressed to ascending setose trichomes just below nodes and sometimes scattered along ribs, canaliculate along one side distally, the edges of the channel antrorsely scabrous, the bottom of the channel with setose trichomes borne singly or in tufts. Leaves ascending, primarily basal, 6 to 10 (including the sheathing bracts subtending partial panicles), elongate; sheaths finely and coarsely veined, essentially glabrous near base, with setose trichomes distally, the inner band membranous, densely setose at apex, the orifice with a glabrous, reddish brown band at the concave to truncate apex, splitting with age, the adaxial surface honey-colored, the abaxial surface light brown; ligule a narrow, inconspicuous band of appressed trichomes; blades to 6 dm long, 2–5 mm wide, narrowly linear, flattened to plicate or subinvolute, long-acuminate to apex, finely veined, gray-green, becoming light brown with age, scabrous on margins and midcosta both adaxially and abaxially, the adaxial surface smooth and glabrous proximally, scabrous distally, shiny, with an inconspicuous, antrorsely scabrous midcosta, the abaxial surface smooth, honey-colored at base, glabrous ex-



Figure 1. *Rhynchospora angustipaniculata* M. T. Strong. —A. Habit. —B. Detail of inflorescence panicle branch with spikelets. —C. Spikelet. —D. Spikelet scale. —E. Achene. (Drawn from the isotype, *Hahn 4374*, US.)

cept for the prominent midcosta, which has dense, setose trichomes borne singly or in tufts along each side at base. Inflorescence of 2 to 4 narrow panicles from the upper sheathing bracts, 2–6 × 1–2.5 cm; sheathing bracts leaf-like, but reduced; peduncles compressed-trigonal or subflattened, antrorsely scabrous on angles, elongate, flexuous, 0.4–0.5 mm wide; panicle branches short, trigonal, scabrous-hispid on angles and in lines on side facing spikelet, the branches and spikelet pedicels each subtended by a tubular prophyll and linear bract at base, the lower bract ovate-acuminate and long-awned, the upper prophyll smaller, ovate, truncate at apex, unawned. Spikelets ovoid-lanceoid, 2 to 18 per panicle, solitary and short-pedicellate, mature fruiting spikelets (8–)9–14(–15) × 1.3–1.8 mm, 1–1.3 mm wide at anthesis; scales 8 to 12 per spikelet, thinly herbaceous, essentially glabrous, light brown with brown lineations, midcosta indistinct proximally, prolonged at apex as a short, antrorsely scabrous awn, the margins narrowly scarious; fertile scales 4 to 7, lanceolate-ovate, 4.5–9 × 2–3 mm, scabrous along the midcosta distally; sterile scales 4 to 5 at spikelet base, ovate, subdistichous, smaller than the fertile, 1.5–3.5 mm long (excluding awn), 1–2 mm wide. Flowers perfect, 2 or 3(to 4) maturing achenes, the distal flowers of a spikelet staminate with abortive pistil; stamens 3, the anthers linear, 2–3 mm long, basifixed, thecae parallel, longitudinally dehiscent, apiculate at apex; styles simple, unbranched, glabrous, the tip expanded. Achene biconvex, widely elliptic to elliptic-obovoid, 1.9–2.2 mm long (excluding style base), (1.3–)1.5–1.8 mm wide, minutely and somewhat obscurely cancellate, appearing smooth at low magnification, yellowish brown; style base triangular-lanceolate, 2.5–3.5 mm long, 1–1.2 mm wide at base, 2-lobed and subconfluent at base with the achene apex, the junction of achene apex and base of the style base bordered only by a low marginal ridge, light brown to light grayish brown, thin, somewhat spongy; bristles 6, antrorsely barbed, exceeding the achene, shorter than to rarely reaching the tip of the style base.

Habitat and distribution. At present, known only from rock outcrops on the summits of Mts. Ayanganna and Kopinang, Pakaraima Mountains, Guyana.

With its culms that are canaliculate along one side (at least distally), inflorescence of partial panicles from the upper sheathing bracts, unbranched style, cellular-cancellate achene surface, and elongate perianth bristles, *Rhynchospora angustipaniculata* is best placed in *R. sect. Paniculatae* Böck-

eler as circumscribed by Kükenthal (1949). However, the 6-sided achene epidermal cells of *R. angustipaniculata*, even though they are characteristic of species in that section, differ in being somewhat isodiametric, while in *R. sect. Paniculatae* and the closely related *R. sect. Racemosae* C. B. Clarke, they are typically elongated (appearing rectangular at low magnification) and oriented horizontally to the main axis (at least medially). In addition, the style base of *R. angustipaniculata* is subconfluent with the achene apex and separated only from it by a low, marginal ridge, while species of *R. sect. Paniculatae* and *R. sect. Racemosae* generally have a style base that is articulate with the achene apex. In habit, *R. angustipaniculata* is very similar to the West Indian species *R. domingensis* Urban. However, it seems to have its closest affinities to another West Indian species, *R. longiflora* Presl. From *R. longiflora*, *R. angustipaniculata* differs in having leaf blades with setiferous midcostas abaxially (vs. scabrous), narrower inflorescence panicles, slightly longer achenes (1.9–2.2 vs. 1.7–2 mm long), a longer style base (2.5–3.5 vs. 1.5–2.5 mm long) that is 2-lobed at its base and subconfluent with the achene apex (that of *R. longiflora* is unlobed at its base and articulated with achene apex); and longer perianth bristles.

The epithet alludes to the narrow inflorescence panicles of the species.

Paratypes. GUYANA. **Cuyuni–Mazaruni Region:** Pakaraima Mountains, 2 km transect along summit ridge of Mt. Ayanganna, low sclerophyllous community, organic soils on sandstone, in cliff crevices, 05°23'N, 59°59'W, 1800–2000 m, 3 Nov. 1992, *B. Hoffman 3187* with *T. Henkel* (BRG, MO, NY, US).

Rhynchospora ayangannensis M. T. Strong, sp. nov. TYPE: Guyana. Cuyuni–Mazaruni Region: Pakaraima Mountains, NE plateau of Mt. Ayanganna, open scrub, moist slopes and small plateaus, occasional exposed sandstone, 05°23'N, 59°58'W, 1500–1650 m, 1 Nov. 1992, *T. Henkel 88* with *B. Hoffman* (holotype, BRG; isotypes, K, MO, NY, US 3385737). Figure 2.

Haec species a congeneris sectionis *Pseudoaurearum* C. B. Clarke achenio obpyriformi ad subturbinato stipitato in rostrum triangulati-lanceolatum ad lanceolatum desinente distinguitur.

Coarse rhizomatous perennial; rhizome short, bulbous-thickened, the culms borne singly or sometimes 2 together from the rhizome; sheathing base of culm 2–3 cm wide; roots coarse, stiff. Culms stout, erect to ascending, 1–1.7 m tall, 3–6 mm wide near base, narrowing to 1 mm distally, trigon-



Figure 2. *Rhynchospora ayangannensis* M. T. Strong. —A. Habit. —B. Detail of inflorescence panicle branch with spikelets. —C. Spikelet. —D. Spikelet scale. —E. Achene. (Drawn from the isotype, Henkel 88, US.)

ous with blunt angles, the sides plane or concave proximally, finely ribbed, smooth, glabrous, green to brownish, shallowly canaliculate along one side distally, the edges of the channel antrorsely scabrous. Leaves ascending, basal and cauline, numerous, elongate; sheaths finely veined, glabrous, greenish brown to brown, the basal sheaths reddish brown adaxially near base, with a membranous, reddish brown inner band and deeply U-shaped orifice, splitting with age, the cauline sheaths with a herbaceous inner band and U-shaped, scarious-tipped orifice; ligule absent; blades of basal leaves narrowly linear, flattened to subplicate, to 1.5 m long, 1–1.8 cm wide, finely veined, greenish brown to brown, somewhat glossy, antrorsely scabrous on margins, very long-acuminate to a trigonous-subulate apex, the adaxial surface with convex epidermal cells that give the surface a minutely bullate texture, glabrous proximally, scabrous distally, the abaxial surface minutely papillose, glabrous, the midcosta antrorsely scabrous distally, smooth below; blades of cauline leaves like the basal ones, but becoming increasingly shorter and narrower toward apex of culm. Inflorescence of 4 or 5, remote, pyramidal partial panicles from the upper sheathing bracts, panicles (3.5–)4–7(–7.6) × 4–8 cm, the lower long-pedunculate, with 20 to 70 spikelets, the terminal panicle with 50 to 150 spikelets; sheathing bracts leaf-like, gradually reduced distally; peduncles slender, 0.9–1 mm wide, elongate, flexuous, subflattened to compressed-trigonous or plano-convex in cross section, finely ribbed, smooth to remotely antrorsely scabrous on angles proximally, scabrous distally on two angles, the sides glabrous; panicle branches plano-convex, trigonous, or 4-angled toward apex of main axes, the margins narrowly winged, setose-scabrous on the wing angles, each subtended by a tubular prophyll and linear bract at base of both branches and spikelet pedicels, the lower bract ovate-lanceolate, long-awned, ciliate-scabrous on margins and nerves, the upper prophyll smaller, ovate, truncate at apex, unawned, essentially glabrous. Spikelets ellipsoid, mature fruiting spikelets 5–6 × 1.8–2.5 mm, borne singly on branches, pedicelled, the terminal spikelet of a branch short-pedicelled or sessile, the pedicels terete to subflattened, essentially glabrous; scales 13 to 15 per spikelet, thin, somewhat translucent, light greenish brown to stramineous, glabrous, with a single, inconspicuous, greenish midcosta, the apex acute to acuminate, short-mucronate; fertile scales 9 or 10, ovate-elliptic, (3–)3.2–4 × (1.1–)1.5–2.2(–2.4) mm; sterile scales 4 or 5 at spikelet base, ovate to ovate-elliptic, smaller than the fertile, (1.4–)1.5–2.9(–3) × 1–1.5(–1.6)

mm. Flowers perfect, all maturing achenes; stamens 3, the anthers linear, 0.8–1.2 mm long, basifixed, apiculate at apex, thecae parallel, longitudinally dehiscent; styles 2-branched, glabrous, black, the branches about as long as the unbranched portion. Achene biconvex, with convex or bulging faces, obpyriform to subturbinate, 2–2.2 mm long (including stipitate base), (0.9–)1–1.1 mm wide, the stipe (0.5–)0.6–0.8(–0.9) mm long, shallowly cellular-reticulate to essentially smooth, orange-brown to dark brown, glossy; style base triangular-lanceolate to lanceolate, (1.1–)1.2–1.5(–1.6) mm long, 0.4–0.8 mm wide at base, thin, flattened, narrower than achene, sulcate above the ridged, obtuse to truncate apex of achene, inconspicuously cellular-reticulate and wrinkled, light brown to grayish brown, sometimes whitened at base; bristles 6, antrorsely barbed, 4 to 6 greatly overtopping the achene, equaling to shortly exceeding the style base, 1 to 2 sometimes shorter than the achene or rudimentary.

Habitat and distribution. Known only from Mt. Ayanganna, Pakaraima Mountains, Guyana, on moist slopes and small plateaus in low forest or open scrub at 1400–1650 m.

With its stout culms and well-developed leaves with blades 10–18 mm wide; inflorescence of 4 or 5, remote, pyramidal partial panicles from the upper sheathing bracts; ovoid-ellipsoid spikelets; pale brown spikelet scales with reddish lineations; 2-branched style; glossy, orange-brown to brown, shallowly cellular-reticulate to essentially smooth achenes; and 5 or 6 well-developed antrorsely barbed perianth bristles, *Rhynchospora ayanganensis* seems to be best placed in *R.* sect. *Pseudoaureae* C. B. Clarke. However, the obpyriform to subturbinate achene with stipitate base and triangular-lanceolate to lanceolate style base are uncharacteristic of other South American species assigned to that section. Kükenthal (1949) included three species in *R.* sect. *Pseudoaureae*, *R. metralis* C. B. Clarke, *R. paraensis* Shrader ex Kunth, and *R. sclerioides* Hooker & Arnott. Of these, the first two are South American species, while *R. sclerioides* is native to Polynesia. *Rhynchospora ayanganensis* is most closely related to *R. metralis* and *R. paraensis*, which differ from it in having achenes that are obovate, estipitate (or at most shortly attenuate at base), and have a style base that is triangular. However, the achene of *R. ayanganensis* does show affinities to these two species, including the 6-sided, isodiametric cells of the epidermis; rimmed apex; and elongate perianth bristles that are persistent at its base. The achenes of *R. sclerioides* are more characteristic of species in *R.* sect.

Paniculatae both in orientation of the epidermal cells (see discussion under *R. angustipaniculata*) and the lanceolate-attenuate style base that is articulate with the achene apex (not conic-subulate as described by Kükenthal) and it is perhaps better placed there. However, *R. sclerioides* has a deeply 2-branched style, which allies it to *R.* subg. *Diplostyleae* Benth & Hooker. Species of *R.* sect. *Paniculatae* typically have an unbranched or slightly bilobed style and are included under *R.* subg. *Haplostyleae* (Nees) Benth & Hooker.

Paratype. GUYANA. Upper Mazaruni River basin, Mt. Ayanganna, frequent in Thompson Camp, 1418 m, 12 Aug. 1960, S. Tillett & C. Tillett 45121 (NY).

Rhynchospora bakhuisensis M. T. Strong, sp. nov. TYPE: Surinam. In montibus Bakhuis inter flum, Kabalebo et Coppename Sinistrum, Bakhuis Mountains, top near camp 3, 600–700 m, 22 Feb. 1965, P. Florschütz & P. Maas 2954 (holotype, U 029604). Figure 3.

Haec species inter congeneros sectionis *Pseudoaurearum* C. B. Clarke *R. paraensis* Schrader ex Kunth affinis, sed ab ea culmis et foliis glabris, lamina foliari marginibus non nisi obtuse scabris atque achenio 1.0–1.3 mm longo 0.9–1.1 mm lato setis 1.5–2.0-plo longioribus subtento et in rostrum complanatum non nisi leviter incrassatum marginibus basi laevibus, desinente differt.

Robust perennial with narrow, vertical, woody caudex bearing fibrous remnants of old leaf bases, the culms borne singly from the rhizome; roots coarse; sheathing base of culm 1–1.5 cm wide. Culm ascending, 1–1.5 m tall, 3–6 mm wide proximally, triquetrous, firm, finely ribbed and channeled, glabrous, dark green, shallowly canaliculate along one side distally. Leaves ascending, numerous, primarily basal, 2 or 3 cauline below the inflorescence, elongate; sheaths short, finely veined, septate-nodulose, glabrous, brown, inner band firm, the orifice deeply U-shaped with a ciliate margin; ligule absent; blades of basal leaves narrowly linear, flattened to subfolded or V-shaped toward base, subplicate distally, up to 1.5 m long, 1.2–2.5 cm wide, finely veined, septate-nodulose, glabrous, smooth, deep green, minutely punctate between veins abaxially, bluntly scabrous on margins and abaxial midvein, long-acuminate to apex; blades of cauline leaves like the basal ones but becoming increasingly shorter and narrower toward apex of culm. Inflorescence ca. 50 cm long, of 5 remote, partial panicles (including the terminal one) from the upper sheathing bracts, the partial panicles somewhat open, globose to obtusely trigonous, 5–6 cm diam., with 240 to 320 spikelets each; sheathing bracts leaf-like, gradually reduced distally; pe-

duncles short, that of the lowest panicle to 5 cm long, 1–1.2 mm wide, slender, flattened, finely ribbed, short pubescent; panicle branches trigonous to flattened-trigonous or plano-convex, pubescent, horizontally divergent to reflexed or only the uppermost ascending, each subtended by a tubular prophyll and linear bract at base, the bract ovate-lanceolate, long-awned, ciliate-scabrous on margins and nerves, the prophyll smaller, ovate, truncate at apex, unawned, pubescent; pedicels of spikelets, when present, short, flattened-trigonous to flattened, short-pubescent, the spikelets congested at tips of lateral branches, borne singly or more commonly sessile and in fascicles of 2 or 3 at branch tips. Spikelets narrowly ovoid-ellipsoid to oblong-ovoid, 3.6–5 × 1–1.2 mm, the scales spreading at maturity, the spikelets then to 2 mm wide, greatly elongating when insect galls present; scales 11 to 13, thinly herbaceous, light brown to reddish brown, glabrous, with narrow scarious entire margins, lateral nerves indistinct, the narrow pale green midcosta prolonged at apex as a 0.3–0.5 mm antrorsely scabrous awn; fertile scales 3 to 5, oblong-ovate, 2.4–3 × 1–1.3 mm, sterile scales 7 to 10, ovate to oblong-ovate, decreasing in length to base, 0.5–2.3 mm long. Flowers perfect; stamens 3, the anthers linear, 1.5–2 mm long, apiculate at apex, basifixed, thecae parallel, longitudinally dehiscent; style 2-branched, the branches minutely scaly. Achene biconvex, obovate, the broadly acute or subrounded apex with a pale, distinct rim extending downward along angles, 1–1.3 mm long (excluding style base), 0.9–1.1 mm wide, surface reticulated at early stages of maturity, at later stages of maturity shallowly reticulated to smooth, the lighter colored cell walls strikingly contrasting with the dark brown cell bodies, shiny, brown to reddish brown at maturity; style base triangular or triangular-sagittate, ca. 1 mm long and as wide at base, light brown, flattened, slightly thickened, smooth on margins; bristles 6, antrorsely barbed, exceeding achene and style base, frequently 1 or 2 rudimentary or shorter than achene body.

Habitat and distribution. Known only from the type collection made on a mountain summit in the Bakhuis Mountains, Surinam.

This is a species of *Rhynchospora* sect. *Pseudoaureae* C. B. Clarke. It is closely related to *R. paraensis* Schrader ex Kunth but differs from that species in having glabrous culms and leaves, the blades only bluntly scabrous on margins; smaller achenes (1–1.3 × 0.9–1.1 mm); a flattened only slightly thickened style base with smooth margins; and longer perianth bristles that are from 1.5 to 2



Figure 3. *Rhynchospora bakhuisensis* M. T. Strong. —A. Habit. —B. Detail of inflorescence panicle branch with spikelets. —C. Spikelet. —D. Spikelet scale. —E. Achene. (Drawn from the holotype, *Florschütz & Maas 2954*, U.)

times longer than those of *R. paraensis*. *Rhynchospora paraensis* differs in having finely pubescent culms and leaf sheaths, the orifice of the leaf sheath pilose; coarsely ciliate leaf blade margins; larger achenes ($1.2\text{--}1.6 \times 1\text{--}1.3$ mm); a swollen spongy-thickened style base that is antrorsely scabrous on margins at base; and shorter perianth bristles.

Rhynchospora donselaarii M. T. Strong, sp. nov.

TYPE: Surinam. Sipaliwini Savanna: wet valley, 27 Aug. 1966, *J. van Donselaar 3618* (holotype, U 210087). Figure 4.

Haec species a congeneris sectionis *Spermodontum* Künthenthal achenio ovato ad oblongo-ovato non profunde biconvexo, laevi, ad basin subsessilem vel brevistipitatam cavitatibus amplis duabus praedito distinguitur.

Slender, rhizomatous perennial; sheathing base of culm 0.8–1.2 mm wide; roots fibrous, brown. Culms slender, ascending, 7–21 cm tall, 0.4–0.8 mm wide, trigonous, finely ribbed, smooth, pale green, glabrous, often branching and rooting from lower nodes. Leaves ascending, basal and cauline, the cauline elongate, surpassing the inflorescence; sheaths finely veined, glabrous, greenish to pale brown, the inner band herbaceous, closed at summit with a membranous U-shaped to truncate, reddish brown orifice, splitting with age; ligule an obscure to very short membranous band at adaxial base of blade (on some blades); blades (0.4–)5–22 cm long, 0.4–0.7 mm wide (folded), 1.2–1.5 mm wide (unfolded), narrowly V-shaped to longitudinally folded, often tightly folded and appearing flattened and 2-sided, narrowly linear, ascending, long-acuminate to apex, finely veined, smooth, pale green, the margins near apex remotely antrorsely scabrous. Inflorescence of (1 to) 2 or 3, remote, lax corymbs of 2 or 3 (to 4) short-pedicelled spikelets, the corymbs $10\text{--}20 \times 5\text{--}8$ mm; corymb branches trigonous to compressed-trigonous or sometimes 4-sided and rectangular in cross section, glabrous, the branches and spikelet pedicels each subtended by a tubular prophyll and linear-setaceous bract at base, the lowermost bract linear-lanceolate and long-awned, the upper prophyll smaller, ovate, with a notched apex, the spikelets on pedicels 1–10 mm long, borne singly or in fascicles of 2 or 3 at branch tips. Spikelets ovoid-lanceoloid with acuminate apex, $7\text{--}9 \times (1.2\text{--})1.3\text{--}2$ mm, the scales spreading with maturing achenes; scales 7 to 9 per spikelet, lowermost sterile, ovate-lanceolate, narrowly acute to acuminate at apex, sterile basal and lower fertile scales somewhat thickened and coriaceous, pale brown, smooth and sublustrous, with broad scarious margins, upper fertile scales ovate-lanceolate to

lanceolate, thin and herbaceous, brown, usually hidden by the lower fertile scales, midcosta pale, very narrow, distinct, prolonged beyond the acute to acuminate apex of the scale as a short awn, lateral nerves very fine, indistinct; fertile scales 3 or 4, $5\text{--}7 \times 1\text{--}3.2$ mm; sterile scales 4 or 5 at spikelet base, smaller than the fertile, $2\text{--}5 \times 1.3\text{--}2.6$ mm. Flowers perfect, 1 or 2 (to 3) maturing achenes, the distal flowers of a spikelet staminate with abortive pistil; stamens 3, the anthers linear, 1.5–2 mm long, basifixed, thecae parallel, longitudinally dehiscent, apiculate at apex; styles 2-branched, glabrous, the stigmas nearly equaling the length of the unbranched portion. Achene shallowly biconvex, ovate to oblong-ovate, $2\text{--}2.3 \times 1.8\text{--}2$ mm, pale brown, minutely scrobiculate, with transversely elliptic smooth area medially on each side, this often with a gray longitudinal stripe or patch medially, the base on each side with 2 large dark-colored cavities just above and lateral to the axis of the subsessile to short-stipitate base, the apex 2-lobed, the lobes forming a cup encircling the style base; style base small, triangular, equaling or shortly exceeding the rim of the apical lobes of the achene; bristles absent.

Habitat and distribution. Known only from the type collection made in the Sipaliwini Savanna, Surinam.

The combination of an inflorescence of lax corymbs; deeply 2-branched style; lack of perianth bristles; and in particular, an essentially smooth achene with a 2-lobed, prolonged cup-like rim at apex that encircles a small triangular style base, places this new species in *Rhynchospora* sect. *Spermodontes*. Among species in that section, *R. donselaarii* can be distinguished by its ovate to oblong-ovate, shallowly biconvex, essentially smooth achenes with two large dark-colored cavities just above and lateral to the axis of the subsessile to short-stipitate base. The type collection of this species was cited as *R. brevirostris* Grisebach by Lindeman and van Donselaar (1971). However, it differs from that species in its larger spikelets ($7\text{--}9 \times (1.2\text{--})1.3\text{--}2$ mm vs. $3\text{--}4 \times 0.8\text{--}1.4$ mm) and larger ovate to oblong-ovate shallowly biconvex achenes ($2\text{--}2.3 \times 1.8\text{--}2$ mm vs. $1.2\text{--}1.5 \times 1\text{--}1.3$ mm). Furthermore, the achenes of *R. brevirostris* are rounded-obovate, thickly biconvex, have a thickened tongue-like stipe, and bear two cellular swellings on either side at base.

The new species is named in honor of its collector, Johannes van Donselaar, who studied savanna ecosystems in Surinam. At the time he collected



Figure 4. *Rhynchospora donselaarii* M. T. Strong. —A. Habit. —B. Detail of inflorescence corymb branch with spikelets. —C. Spikelet. —D. Spikelet scale. —E. Achene (lateral view). —F. Achene (dorsal view). (Drawn from the holotype, *van Donselaar 3618*, U.)

this, he was an ecologist with the Institute of Systematic Botany, Utrecht (U), The Netherlands.

Rhynchospora pubisquama M. T. Strong, nom. et stat. nov. Replaced synonym: *Rhynchospora cephalotes* var. *angustifolia* Uittien, Rec. Trav. Bot. Néerl. 30: 188. 1933, not *Rhynchospora angustifolia* Palla, Denkschr. Akad. Wien, Math.-Nat. 79: 193. 1908. TYPE: Surinam. Upper Gran Rio, 10 Oct. 1910, *Hulk 346* (lectotype, selected here, U 031820).

Habitat and distribution. Rocky openings, granitic outcrops, and rocky savannas or scrub. Occurs on Tafelberg Mountain (southern end of Emma Ketten mountain range) and in the Wilhelmina mountains of Surinam, and at Pararé rapids along the Arataye River on a slope of an inselberg and on Mt. Nouragues in the Balenfois Mountains of French Guiana.

With its combination of contracted inflorescence panicles of crowded spikelets; thickly herbaceous middle and lower spikelet scales; 2-branched style; well-developed antrorsely barbed perianth bristles; and cellular-reticulate achene surface, *Rhynchospora pubisquama* is a species of *R.* sect. *Cephalotae* Kükenthal. It is closely related to *R. cephalotes* (L.) Vahl and has been described as a variety of that species (*R. cephalotes* var. *angustifolia*) by Uittien (1933). It differs from *R. cephalotes* in having narrower leaf blades (2.5–6(–10) mm wide); a narrow, oblong inflorescence; puberulent spikelet scales; semi-glossy, shallowly reticulate achenes; and a triangular-lanceolate style base that has a narrow rim between its base and the apex of the achene, while *R. cephalotes* has broader leaf blades ((4–)5–15 mm wide); an ovoid to oblong-ovoid, pyramidal, or subglobose inflorescence; glabrous spikelet scales; a transversely rugulose-reticulate achene; and a lanceolate-attenuate style base that overlaps the shoulders of the achene at its base. In habit, *R. pubisquama* is very similar to *R. imeriensis* (Kükenthal) W. Thomas, which is endemic to the Venezuelan Guayana region of South America and was also previously described as a variety of *R. cephalotes* (Thomas, 1996). However, it differs from that species in having narrower leaves (2.5–6(–10) mm wide); puberulent spikelet scales; semi-glossy, shallowly cellular-reticulate achenes; and triangular-lanceolate style base; while *R. imeriensis* has broader leaf blades in the same range as *R. cephalotes*; glabrous spikelet scales that are at most finely scabrous-pubescent at the apex; transversely rugulose-reticulate achenes; and a lanceolate-attenuate style base. Because of the range of characters in *R. pub-*

isquama that differ consistently from other closely related species in *R.* sect. *Cephalotae*, I feel that this taxon is best treated as distinct from *R. cephalotes*.

At the species level, it is necessary to give this plant a new epithet different from the varietal epithet of the basionym (*angustifolia*) since that epithet is already in use for another species of *Rhynchospora*. The epithet "*pubisquama*" alludes to the puberulent spikelet scales of the species.

Paratypes. SURINAM. Expeditie naar Wilhelminagebergte, 5 Aug. 1926, *Stahel 585* (U); Tafelberg (Table Mountain), Grace Falls, Arrowhead Basin, among rocks, 625 m, 26 Aug. 1944, *Maguire 24493* (F, MO, U, US); 1 km SE Savanna No. 8, rocky dry opening in *Clusia* bush, 780 m, 29 Aug. 1944, *Maguire 24559* (F, U, US). FRENCH GUIANA. Fleuve Approuague, Rivière Arataye, saut Pararé, pente d'un inselberg, zone de transition, en bordure d'une source, 22 Oct. 1978, *Sastre 6221* (CAY); Montagne des Nouragues, Bassin de l'Arataye, sommet, Fourré isolé de savanne roche, 04°03'N, 52°42'W, 15 Aug. 1988, *Sarthou 408* (CAY).

Rhynchospora rupicola M. T. Strong, sp. nov. TYPE: Surinam. In montibus, qui dicuntur Emmaketen, rock savanna on S side of top, SW of Grote Hendriktop, ca. 935 m, 20 Aug. 1959, A. Daniëls & F. Jonker 998 (holotype, U 276785; isotype, US). Figure 5.

Haec species a congeneris sectionis *Psilocaryae* (Torrey) C. B. Clarke culmis gracilibus (1.0–1.3 mm latis), inflorescentiae contractae ramis lateralibus brevibus et spiculis 4–5 mm longis solitariis vel fasciculatis ad apices ramorum atque achenio in rostrum apice truncatum basi lunatum elobatum desinente distinguitur.

Slender perennial; rhizome short, the culms borne singly or sometimes 2 or 3 together from nodes of the rhizome; sheathing base of culm 4–6 mm wide; roots fibrous. Culms slender, ascending, 4–7 dm tall, 1–1.3 mm wide, trigonous, with concave sides, finely ribbed, smooth, green, glabrous except for the hirsute apex just below the inflorescence. Leaves ascending, primarily basal, 6 to 8, elongate, surpassing the inflorescence; sheaths finely veined, hirsute to glabrescent, greenish to pale brown, the inner band herbaceous, closed at summit with a membranous U-shaped to truncate orifice, splitting with age; ligule an obscure to very short membranous band at adaxial base of blade (on some blades); blades to 8 dm long, 2–4 mm wide, flattened to subfolded, narrowly linear, ascending to flaccid, long-acuminate to apex, finely veined, smooth, green to pale brown, the margins and abaxial midcosta remotely scabrous and beset with elongate, ascending trichomes. Inflorescence of 1 or 2 approximate to subremote, compact, cor-



Figure 5. *Rhynchospora rupicola* M. T. Strong. —A. Habit. —B. Detail of inflorescence panicle branch with spikelets. —C. Spikelet. —D. Spikelet scale. —E. Achene. (Drawn from the holotype, *Daniëls & Jonker 998*, U.)

ymbose or pyramidal panicles from the upper sheathing bracts, the panicles (1.5–)2–4 cm diam.; sheathing bracts 2 or 3, leaf-like, the lowermost elongate, to 7 dm long, 2–3 mm wide, greatly overtopping the inflorescence; panicle branches short, trigonous to subcompressed, hirsute particularly on margins, the branches and spikelet pedicels each subtended by a tubular prophyll and linear bract at base, the lower bract ovate-acuminate and long-awned, the upper prophyll smaller, ovate, with a notched apex, the spikelets short-pedicelled, appearing sessile, borne singly or in fascicles of 2 or 3 at branch tips. Spikelets ovoid-ellipsoid, 50 to 150 per panicle, 4–5 × 1.3–1.8 mm; scales 8 to 10 per spikelet, thinly herbaceous to submembranous marginally, whitish to stramineous or light brown, with a distinct narrow, green midcosta, prolonged as an antrorsely scabrous awn below the acute to acuminate, emarginate apex, the sides indistinctly veined; fertile scales ovate to ovate-elliptic or ovate-lanceolate (distal scales), 6 to 7, 3–4 × 1.6–2 mm; sterile scales ovate, 2 to 3 at base, smaller than the fertile, 2–2.5 × 1.2–1.4 mm. Flowers perfect, 1 or 2 (to 3) maturing achenes, the distal flowers of a spikelet staminate with abortive pistil; stamens 3, the anthers linear, 1.5–2 mm long, basifixed, thecae parallel, longitudinally dehiscent, apiculate at apex; styles 2-branched, glabrous, the stigmas 1/2 to nearly equaling the length of the unbranched portion, minutely scaly. Achene biconvex, obovate, 1–1.3 mm long (excluding style base), 1.1–1.2 mm wide, transversely rugulose with a short-stipitate, reddish cellular-reticulate base, stramineous to light brown, shiny; style base triangular, 0.7–1 mm long, as wide as to slightly narrower than the achene body at its base, truncate to rounded or slightly emarginate at apex, lunate to somewhat shallowly lobed at junction with achene apex, whitish, spongy, with a granular or obscurely cellular-reticulate surface; bristles absent.

Habitat and distribution. Occurs on granitic outcrops, balds, and rocky savannas or scrub on mountain summits in the Kanuku and Kamao mountain ranges of Guyana and in the Emma Keten and Bakhuis mountain ranges of Surinam.

Rhynchospora rupicola is a species of *R. sect. Psilocarya* (Torrey) C. B. Clarke as circumscribed by Kükenthal (1949, 1950). It is allied to the group of species in that section that are rhizomatous perennials (e.g., *R. velutina* (Kunth) Böckeler). With its slender culms, narrow flattened leaf blades, and contracted corymbose panicles bearing some spikelet fascicles at branch tips, *R. rupicola* might seem to be best placed in the closely allied *R. sect. Lu-*

zuliformes Kükenthal. However, species in that section typically have inflorescence panicles that are very small with densely fascicled spikelets and little lateral branching evident. Although the inflorescence panicles of *R. rupicola* are contracted, there is lateral branching clearly evident from the main axis, and the inflorescence is more characteristic of the more open corymbose inflorescence panicles of perennial species of *R. sect. Psilocarya*. There are also distinct differences in the style base between species of *R. sect. Luzuliformes* and the perennial species of *R. sect. Psilocarya* (including *R. rupicola*). Achenes of species of *R. sect. Luzuliformes* bear a depressed-trigonous style base that is decurrent on the margins of the achene down to its base forming a channel along the achene margins. Style bases of the perennial species of *R. sect. Psilocarya* are triangular and the lobed or lunate base is at most shortly decurrent on the shoulders of the achene, and does not form a channel along the achene margins, characteristic of those of *R. rupicola*. Because of the similar characteristics of *R. rupicola* to perennial species of *R. sect. Psilocarya*, I feel that it is best circumscribed as a species of that section.

The epithet alludes to the rocky habitat the species occurs in.

Paratypes. GUYANA. U. **Takutu–U. Essequibo Region:** NW Kanuku Mountains, top of Nappi Mountain, 12 km S of Nappi Village, elfin forest patches, among granite balds, 03°18'N, 59°33'W, 750–900 m, 8 Feb. 1993, *B. Hoffman* 3572 with *R. Foster* (BRG, K, MO, NY, U, US); Kamao Mountains, 2 km N of camp on Kamao River, scrub forest on granitic outcroppings, 01°32'N, 58°50'W, 520 m, 9 Nov. 1996, *D. Clarke* 2993 (BRG, MO, NY, US); Rewa River, summit of unnamed peak, 5.6 km W of camp, medium canopy semi-open forest on brown sand and scrub forest on granitic outcroppings, 02°58'N, 58°38'W, 400 m, 19 Feb. 1997, *D. Clarke* 3676 (BRG, K, MO, NY, US). SURINAM. Blanche Marievallen, Nickerierivier, Lands Bosbeheer, 20 June 1965, *P. Maas & J. Tawjoeran* 10930 (U).

Acknowledgments. This paper is number 39 in the Smithsonian Institution's Biological Diversity of the Guianas Program publication series. A floristic treatment of the Cyperaceae (sedges) for the *Flora of the Guianas* is in preparation by the author and collaborators. I thank Cathy Pasquale for the superb illustrations; Robert Kral (BRIT), Dan Nicolson (US), and Wayt Thomas (NY) for reviewing the manuscript; Roy Gereau (MO) for reviewing the Latin diagnoses; Christian Feuillet (US) for information on localities in French Guiana; and curators at CAY, F, MO, NY, and U for loan of specimens.

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